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EXAMINER				
GRAMAGLIA, MAUREEN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/509,711

Applicant(s)

GOODWIN ET AL.

Examiner

Maureen Gramaglia

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 25-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 January 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, 6-10, and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Publication WO 98/10116 to Kolluri in view of U.S. Patent 5,414,324 to Roth et al. (from Applicant's IDS)

In regards to Claims 1, 2, and 9, Kolluri teaches a plasma assembly comprising a first pair of vertically arrayed, parallel spaced apart planar electrodes 78, 78; the spacing between the electrodes of the pair forming a first plasma region, characterized in that the assembly further comprises a means including guide rollers and reels 80 for transporting a flexible substrate 74 through the first plasma region; and an atomizer 81 adapted to introduce an atomized liquid coating making material into the plasma region. (Figure 5; at least Page 8, Lines 16-26) Kolluri teaches that the plasma assembly is adapted to operate at a temperature between room temperature up to 1200°C, which range overlaps with and thus renders *prima facie* obvious the claimed range of between room temperature of 20°C and 70°C.

Kolluri does not expressly teach that the plasma assembly is at atmospheric pressure. However, the plasma assembly taught by Kolluri would be structurally capable of being put at atmospheric pressure, based on the pumping rate by pump 45 from outer casing 40 selected by a user. (Figure 5; at least Page 7, Lines 13-17) It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the

structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

In regards to Claims 1, 10, 25, and 26, Kolluri does not expressly teach second and third pairs of vertically arrayed, parallel spaced apart planar electrodes, the space between each pair of electrodes forming second and third plasma regions, wherein the substrate is transported successively from the first plasma region through the second and third plasma regions.

However, it would have been obvious to one of ordinary skill in the art to duplicate the first pair of vertically arrayed, parallel spaced apart planar electrodes to obtain second and third pairs arranged in series with the first pair, for the predictable result of providing additional plasma generation zones for further processing of the flexible substrate 74. It has been held that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

Further in regards to Claim 10, the plasma assembly taught by Kolluri as modified as describe above would be structurally capable of preparing multilayer coatings on flexible substrate 74, simply by running the flexible substrate through the successive plasma zones in single and/or subsequent passes.

Further in regards to Claims 1 and 8, Kolluri does not expressly teach that each planar electrode is a dielectric with a metallic coating, such that at least one dielectric plate is arranged between each pair of electrodes.

Roth et al. teaches that a planar metallic electrode 10 should be covered with dielectric plates 14 on all sides. (Column 3, Lines 31-49)

It would have been obvious to one of ordinary skill in the art to further modify the three pairs of electrodes taught by Kolluri, already modified as discussed above, for each to be a planar metallic electrode covered with dielectric plates on all sides, such that dielectric plates would be arranged between each pair of electrodes. The motivation for making such a modification, as taught by Roth et al. (Column 3, Lines 31-49), would have been to discourage electrical arcing from the edges or back side of the electrode plates.

It is noted in regards to Claim 8, that the electrodes taught by the combination of Kolluri and Roth et al. may be considered as a dielectric (the dielectric plate) with a metallic coating (the attached metal electrode plate).

In regards to Claim 6, the outer casing 40 taught by Kolluri is of an enclosed box shape, as shown in Figure 5, and thus may be considered to comprise a lid (top wall of the box) that prevents escape of a process gas (vaporized liquid) which is required in order to activate a plasma.

In regards to Claim 7, Kolluri teaches that the atomizer 80 is an ultrasonic nozzle. (see at least Page 8, Lines 16-21)

In regards to Claim 26, in the embodiment of Figure 5 of Kolluri, an atomizer 81 that is adapted to introduce an atomized liquid coating making material into the first plasma zone sprays the atomized liquid from proximate the rear wall of the reactor (Page 8, Lines 19-21), and thus in the modified apparatus of Kolluri comprising a

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plurality of duplicated plasma zones, some atomized liquid coating making material may be expected to stray not just into a first plasma zone but also into a second plasma zone.

However, Kolluri teaches an another embodiment (Figure 3), wherein an atomizer 5a is positioned such that gravitational feed of the atomized liquid coating making material results in the material passing directly into the plasma region. (See at least Figure 3; Page 8, Lines 1-9)

It would have been obvious to one of ordinary skill in the art to alternatively modify the atomizer position of the embodiment of Figure 5 of Kolluri to instead locate respective atomizers directly above each respective plasma zone, such that gravitational feed of the atomized liquid coating making material results in the material passing directly into the plasma region, as suggested by the embodiment of Figure 3 of Kolluri, as an art-recognized equivalent means of delivering the atomized liquid coating making material to the respective plasma zones and directly into the RF fields, for the predictable result of enabling different liquid coating making materials to be supplied to different plasma zones, for the formation of a plurality of coating types. It has been held that an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

In regards to Claims 27 and 28, the duplicated first and second plasma regions as rendered obvious by the teachings of Kolluri as discussed above would not have any physical barrier separation, and therefore would operate as open perimeter processes.

It is noted that the baffles 79 (Figure 5) would not act as a physical barrier separation between the plasma zones, as they would merely affect the directional flow of the plasmatized gas but not block or separate its flow to another zone.

In regards to Claim 29, Kolluri already teaches that the means of transporting the substrate through the plasma zone is adapted to transport the substrate both upwardly and downwardly through said zone. (Figure 5) Thus, in the modified apparatus of Kolluri comprising a plurality of plasma zones, the means of transportation may be considered to transport the substrate upwardly through at least a portion of a first plasma zone and downwardly through the other plasma zone, since the substrate would move both upwardly and downwardly through each zone.

5. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolluri in view of Roth et al. as applied to claim 1 above, and further in view of U.S. Patent 6,176,982 to Rickerby et al.

The teachings of Kolluri and Roth et al. were discussed above in regards to Claim 1.

In regards to Claims 3-5, the combination of Kolluri and Roth et al. teaches that each electrode comprises an electrode unit containing an electrode and an adjacent dielectric plate, as discussed above in regards to Claim 1.

The combination of Kolluri and Roth et al. does not expressly teach that each electrode unit comprises a cooling liquid distribution system for directing a cooling conductive liquid, specifically water, onto the exterior of the electrode to cover a planar face of the electrode, or that the electrode unit is in the form of a watertight box having a

side formed by a dielectric plate having bonded thereto, on the interior of the box, a planar electrode together with a liquid inlet and a liquid outlet.

Rickerby et al. teaches that an electrode unit is in the form of a watertight box, having a side formed by an interior-facing plate 46 (analogous to the dielectric plate taught by the combination of Kolluri and Roth et al.) having bonded thereto, on the interior of the box, an electrode 38, wherein a cooling liquid distribution system comprising a liquid inlet 50 and a liquid outlet 52 directs water (a cooling conductive liquid) onto the exterior of the electrode to cover a planar face of the electrode. (Figure 3; Column 5, Lines 21-57)

It would have been obvious to one of ordinary skill in the art to modify the combination of Kolluri and Roth et al. to have each electrode unit be in the form of a watertight box comprising a cooling liquid distribution system as taught by Rickerby et al. The motivation for making such a modification, as taught by Rickerby et al. (Column 5, Lines 49-52), would have been to allow water to be circulated against the inner wall of the electrode, allowing the electrode to be cooled.

It is noted that the electrode units taught by the combination of Kolluri, Roth et al., and Rickerby et al. would still have a planar or plate shape as taught in the primary teachings of Kolluri. It would be well within the skill of one of ordinary skill in the art to adapt the teachings of Rickerby et al. in the context of cylindrical electrodes to be used in the context of planar electrodes as taught by Kolluri, simply by changing the shape of the watertight box to conform to the teachings of Kolluri. It is noted that the test for obviousness is not whether the features of a secondary reference may be bodily

incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

6. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being obvious over Kolluri in view of Roth et al. as applied to Claim 1 above, and further in view of International Publication WO 02/35576 to O'Reilly (from Applicant's IDS).

The applied reference to O'Reilly has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). Contrary to applicant's argument made 18 June 2008, O'Reilly remains valid prior art under 35 U.S.C. 102(e), which states:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, **except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.**

The international application published as WO 02/35576 designated the United States and was published in English, and therefore is valid prior art under 35 U.S.C. 102(e).

This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which

corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The teachings of Kolluri and Roth et al. were discussed above in regards to Claim 1.

In regards to Claims 3-5, the combination of Kolluri and Roth et al. teaches that each electrode comprises an electrode unit containing an electrode and an adjacent dielectric plate, as discussed above in regards to Claim 1.

The combination of Kolluri and Roth et al. does not expressly teach that each electrode unit comprises a cooling liquid distribution system for directing a cooling conductive liquid, specifically water, onto the exterior of the electrode to cover a planar face of the electrode, or that the electrode unit is in the form of a watertight box having a side formed by a dielectric plate having bonded thereto, on the interior of the box, a planar electrode together with a liquid inlet and a liquid outlet.

O'Reilly et al. clearly teaches the identical claimed electrode unit in all the claimed detail. See at least Pages 11-13 and Figures 1-4.

It would have been obvious to one of ordinary skill in the art to modify the combination of Kolluri and Roth et al. to have each electrode unit be in the form of a watertight box comprising a cooling liquid distribution system as taught by O'Reilly et al. The motivation for making such a modification, as taught by O'Reilly et al. (Page 13, Lines 21-30), would have been to cool the electrodes, allowing the problem of thermal management to be overcome.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-10 and 25-29 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 40, 41, and 43 of copending Application No. 10/510555.

Although the conflicting claims are not identical, they are not patentably distinct from each other because Claims 40, 41, and 43 of copending Application No. 10/510555, which incorporate the limitations of Claim 32 of copending Application No. 10/510555, recite all of the structural details of the invention recited in Claims 1-5 and 8-10 of the instant application, including means for transporting a flexible substrate using reels and/or rollers through the atmospheric plasma zones formed by first and second pairs of planar electrodes having dielectric plates therebetween and being in the form of watertight boxes, wherein water is projected against the exterior planar faces of the electrodes for cooling, and would be capable of operating at the claimed temperature range based on user control of such process variables as the power supplied to the electrodes. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

In regards to Claim 6, Examiner takes official notice that it is well-known in the art to provide an outer casing comprising a lid around a plasma generation assembly, to allow for the creation of a controlled processing atmosphere.

Thus, it would have been obvious to one of ordinary skill in the art to provide an outer casing comprising a lid around the plasma generation assembly, for the predictable result of allowing for the creation of a controlled processing atmosphere.

In regards to Claim 7, Examiner takes official notice that it is well-known in the art for an atomizer to be an ultrasonic nozzle.

Thus, it would have been obvious to one of ordinary skill in the art to have the atomizer be an ultrasonic nozzle, as an art-recognized suitable means of generating a vapor from a liquid material supply. It has been held that an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

In regards to Claim 25, it would have been obvious to one of ordinary skill in the art to duplicate the first and second pairs of vertically arrayed, parallel spaced apart planar electrodes recited in claims 40, 41, and 43 of copending Application No. 10/510555 to obtain a third pair arranged in series with the first and second pairs, for the predictable result of providing an additional plasma generation zone for further processing of the flexible substrate. In regards to Claim 26, it would have been obvious to one of ordinary skill in the art to also duplicate the atomizers to locate respective atomizers directly above each respective plasma zone, such that gravitational feed of the atomized liquid coating making material results in the material passing directly into the plasma region, for the predictable result of enabling different liquid coating making materials to be supplied to different plasma zones, for the formation of a plurality of coating types. It has been held that the mere duplication of parts has no patentable

significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

In regards to Claims 27 and 28, the duplicated first and second plasma regions as rendered obvious by the teachings of claims 40, 41, and 43 of copending Application No. 10/510555 as discussed above would not have any physical barrier separation, and therefore would operate as open perimeter processes.

In regards to Claim 29, claim 40 of copending Application No. 10/510555 teaches the pairs of electrodes can be arranged horizontally. Thus, the means of transportation may be considered to transport the substrate upwardly through a first plasma zone and downwardly through the other plasma zone, the plasma zones being located in a horizontal arrangement and thus the running length substrate having to wrap through the zones.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Amendment

9. The Declaration under 37 CFR 1.132 filed 15 January 2009 is insufficient to overcome the rejection of claims 1-10 and 25 based upon Kolluri et al. as set forth in the last Office action because:

It is respectfully noted the declaration primarily addresses the claimed method in Application Serial No. 10/381,690, now issued as U.S. Patent 7,455,892, and argues that that method patentably distinguished over any method taught or suggested in the prior art. Examiner notes that in contrast, the instantly claimed invention is to a plasma

apparatus intended for use to generate an atmospheric plasma with introduction of a liquid coating making material, and that the rejection of record is based upon the combination of Kolluri and Roth, not upon U.S. Patent 5,366,770 to Wang. Examiner will address the arguments made in the declaration to the extent that they apply to the instant claims.

In this regard, examiner respectfully notes that the declaration is mere opinion not supported by any factual evidence. The declaration argues that the combination of atomized liquid and a glow discharge was not previously recognized, however, again the examiner maintains that such an argument is not directed to the structure of the applicant's claimed apparatus. Moreover, it is respectfully noted that whatever the declarant did or did not personally realize at the time of the invention based on his or her actual knowledge is irrelevant. The relevant inquiry is what a hypothetical ordinarily skilled artisan would have gleaned from the cited references at the time of the invention.

Specifically, examiner maintains that one of ordinary skill in the art, informed by the teachings of Roth et al. that a planar metallic electrode 10 should be covered with dielectric plates 14 on all sides to discourage electrical arcing from the edges or back side of the electrode plates, would have found it obvious to further modify the three pairs of electrodes taught by the modified apparatus of Kolluri for each to be a planar metallic electrode covered with dielectric plates on all sides, such that dielectric plates would be arranged between each pair of electrodes. Doing this would not destroy the principle of operation of Kolluri, which after all is directed to forming a stable plasma discharge -- one of ordinary skill in the art would have a reasonable expectation of

success of discouraging arcing and therefore improving the stability of the plasma discharge.

Response to Arguments

10. Applicant's arguments filed 15 January 2009 have been fully considered but they are not persuasive.

The examiner notes the applicant's arguments relying upon the 1.132 declaration; however the declaration has been deemed insufficient to overcome the prior art rejection for the reasons as set forth above.

In so far as applicant argues that Wang was relied upon to show why the 1.132 declaration of Dr. Andrew Goodwin, filed 18 June 2008, was not sufficient to overcome the rejection of record, and that Wang cannot be relied upon to show liquid introduction into a plasma because the aerosol of Wang is physically vaporized in the plasma turning it into a gas precursor, this argument is not persuasive to overcome the rejection of record. Specifically, Wang was merely cited by examiner as an example of aerosol introduction into an APGD process, to illustrate that one of ordinary skill in the art would not find a reference dealing with APGD to be non-analogous relative to the problem of liquid or aerosol introduction into a plasma, but rather would recognize such a reference to be relevant to the problem of generating a plasma with aerosol introduction. Moreover, while the aerosol of Wang may become physically vaporized by the plasma, this alone does not render it irrelevant to considering the scope of relevant knowledge of one of ordinary skill in the art, since the *claimed invention* does not structurally distinguish between an atomized liquid being injected directly into the APGD plasma

versus an atomized liquid merely being supplied to the plasma region, where it may be physically vaporized.

The applicant has argued against the Kolluri reference, stating that the reference cannot be interpreted to encompass a device for generating an atmospheric pressure plasma glow discharge. The examiner disagrees with the applicant's assertion that Kolluri is not capable of forming a glow discharge. The applicant has failed to point out any structural differences between the claimed limitations and the prior art apparatus and it is well settled that the intended use of a claimed apparatus is not germane to the issue of the patentability of the claimed structure. If the prior art structure is capable of performing the claimed use then it meets the claim. *In re Casey*, 152 USPQ 235, 238 (CCPA 1967); *In re Otto*, 136 USPQ 459 (CCPA 1963). The applicant argues that the combination of atomized liquid and a glow discharge was not previously recognized, however, again the examiner maintains that such an argument is not directed to the structure of the applicant's claimed apparatus.

Additionally, the examiner notes that Kolluri discloses that it is known in the art to supply liquid monomers as a vapor using a bubbler, but the teachings of Kolluri effectively teach that it is difficult to entrain enough monomer vapor in the carrier gas without heating to a high temperature and discloses the invention of Kolluri effectively provides a monomer delivery system which eliminates some of the problems of the prior art vapor systems and also provides a deposition that achieves uniform film deposition on all sizes of substrates (pages 1-3). Therefore Kolluri clearly discloses the

advantages of supplying the mist by direct injection into a plasma reactor versus that of supplying a vapor.

Additionally, Kolluri discloses that varying orientations and plasma approaches are obvious to one of ordinary skill in the art depending on the specific requirements for the plasma deposition system. Therefore, one of ordinary skill in the art, taking into consideration the requirements of forming a glow discharge, would have reasonably expected to successfully supply a mist into a glow discharge to deposit a uniform film by atmospheric plasma glow discharge. It would have been well within the skill of one of ordinary skill in the art, informed by the prior art of record including those references just noted, to make any minor process adjustments necessary to employ the apparatus taught by the combination of Kolluri and Roth to successfully supply a mist into a glow discharge to deposit a uniform film by atmospheric plasma glow discharge.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that applicant has realized that an apparatus having the claimed structure allows an atomized liquid to be injected into an APGD without being physically vaporized, and that one of ordinary skill in the art would not have found it obvious to modify the apparatus of Kolluri with the features of the apparatus taught in Roth due to the general understanding at the time of the invention

that APGD plasmas (such as taught by Roth) required gas precursors, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Specifically, examiner maintains that one of ordinary skill in the art, informed by the teachings of Roth et al. that a planar metallic electrode 10 should be covered with dielectric plates 14 on all sides to discourage electrical arcing from the edges or back side of the electrode plates, would have found it obvious to further modify the three pairs of electrodes taught by the modified apparatus of Kolluri for each to be a planar metallic electrode covered with dielectric plates on all sides, such that dielectric plates would be arranged between each pair of electrodes. Examiner recognizes that this is a *different* reason than applicant had for making the claimed apparatus, but that alone does not mean that it would not have been obvious to make such a modification for a different reason. *Doing this would not destroy the principle of operation of Kolluri, which after all is directed to forming a stable plasma discharge – one of ordinary skill in the art would have a reasonable expectation of success of discouraging arcing and therefore improving the stability of the plasma discharge.*

In response to applicant's argument that operating the apparatus of Kolluri and Roth at atmospheric pressure would render the apparatus of Kolluri inoperable due to the formation of filamentary discharge, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the

prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, operating the apparatus of Kolluri and Roth at atmospheric pressure rather than at vacuum pressure changes nothing about the structure of the apparatus, and therefore does not distinguish over the combination of Kolluri and Roth. Moreover, examiner does not concede that the apparatus would be inoperable at atmospheric pressure. Examiner maintains that one of ordinary skill in the art, well informed by all of the teachings of the prior art of record, including forming atmospheric plasma discharge from atomized liquid, would have the desire and the skill necessary to operate the apparatus of Kolluri and Roth at atmospheric pressure.

In response to applicant's argument that the dielectrics of Roth et al. cannot be employed in the apparatus of Kolluri, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does

not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen Gramaglia whose telephone number is (571)272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Maureen Gramaglia/
Examiner, Art Unit 1792

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1792